

Albany, 1.72; Harrisburg, 1.66; Sault Ste. Marie, 0.93; Alpena, 1.38; Detroit, 0.55; Toledo, 1.24; Indianapolis, 1.49; San Diego, 0.00; Fresno, 0.00; San Francisco, 0.00; Sacramento, 0.00; Red Bluff, 0.00; Eureka, 0.06; Walla Walla, 0.04; Olympia, 0.05; Astoria, 0.71; Port Angeles, 0.19.

Details as to excessive precipitation are given in Tables XIII and XIV.

The total snowfall at each station is given in Table II.

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 18. Arkansas, 17, 26. California, 15. Colorado, 1, 2, 4, 10, 11, 18, 21, 24, 26 to 30. Connecticut, 3, 23, 25. Delaware, 24. Georgia, 6, 11, 16, 25. Idaho, 2, 7, 14, 15, 16. Illinois, 1, 23, 24, 25, 27. Indiana, 1, 12, 23, 25, 26. Iowa, 2, 9, 12, 14, 17, 23, 24, 25. Kansas, 2, 12, 17, 22, 23, 25, 27. Kentucky, 4, 26. Louisiana, 26. Maine, 10. Maryland, 5, 13, 24, 27. Massachusetts, 14, 29. Michigan, 11, 25. Minnesota, 1, 2, 3, 9, 12, 16, 19, 20, 21, 23, 24, 25, 29. Missouri, 3, 4, 12, 14, 17, 22 to 26, 28. Montana, 14, 16, 17, 18, 24. Nebraska, 1, 2, 4, 7, 8, 11, 12, 13, 15, 16, 17, 20, 23, 24, 27, 28. Nevada, 1, 6, 27, 28, 29. New Hampshire, 3, 4, 23. New Jersey, 1, 2, 24, 29. New Mexico, 1, 7, 12, 13, 19, 21, 23, 26, 27, 28, 30. New York, 13, 14, 24, 26, 27, 29. North Carolina, 16, 25. North Dakota, 11, 12, 14, 16, 17, 19, 22, 23, 25, 27. Ohio, 4, 14, 22, 24, 25. Oklahoma, 25. Pennsylvania, 13, 14, 24, 26. South Carolina, 14. South Dakota, 6, 7, 8, 12, 15, 20, 22. Tennessee, 11, 15, 25. Texas, 2, 15, 16, 18, 25, 29. Utah, 2, 8, 27, 29. Vermont, 2, 13. Virginia, 29. Washington, 13, 15, 16. West Virginia, 13. Wisconsin, 5, 12, 17, 19, 21, 23, 25. Wyoming, 1, 2, 6.

SLEET.

The dates on which sleet was reported were: Colorado, 2. Montana, 6, 7. Nevada, 1.

WIND.

The prevailing winds for June, 1895, viz, those which were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

The resultant winds, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart II, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity.

Maximum wind velocities of 50 miles or more per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				Miles	
Abilene, Tex.....	25	52	ne.	El Paso, Tex.....	19	51	ne.
Amarillo, Tex.....	1	54	s.	Huron, S. Dak.....	15	55	se.
Do.....	2	72	s.	Jacksonville, Fla.....	5	50	se.
Do.....	13	52	n.	Sioux City, Iowa.....	25	52	n.
Do.....	21	50	e.	Winnemucca, Nev.....	14	54	w.
Chattanooga, Tenn.....	13	60	w.				

LOCAL STORMS.

Destructive or severe local storms were reported as follows:

1st.—Near Mount Blanco, Tex., thunderstorm, 2 horses killed by lightning. Faribault, Sunrise City, and Rice Lake, Minn., windstorms. Zumbrota, Minn., and Colby, Kans., thunderstorms. Ewing, Nebr., hailstorm.

2d.—Morrisville, Vt., windstorm. Bethlehem, N. H., hailstorm. Shaft, Pa., Cumberland and Millville, N. J., and Alpena, Mich., thunderstorms. Struble, Iowa, and Lakin, Kans., windstorms. Beaver City, Nebr., rainstorm.

3d.—Bristol, Conn., hailstorm. Fords Ferry, Ky., thunderstorm. Fayetteville, Ill., and Waco, Nebr., windstorms.

4th.—Charlotte, N. Y., windstorm. Greensboro, Ala., Chattanooga and Hixon, Tenn., Cincinnati, Cedarville, Shenandoah, and Tiffin, Ohio, and St. Charles, Mo., thunderstorms. Cardington, Columbus, Springfield, South Charleston, Mansfield, and Upper Sandusky, Ohio, Brownstown, Ind., and Bel-laire, Mich., windstorms.

5th.—Newark, N. J., thunderstorm. Grahams Forge, Va., windstorm.

6th.—Northville, Vt., hailstorm. Summit, S. Dak., windstorm; one person killed. Bradley, S. Dak., windstorm. Hope, N. Dak., thunderstorm; man killed by lightning.

7th.—Tampa, Fla., thunderstorm.

9th.—Perry, Okla., windstorm; one person injured. Minneapolis, Minn., and Topeka, Kans., thunderstorms.

11th.—Poulan, Sylvester, and Isabella, Ga., hailstorms. South Pittsburg, Tenn., thunderstorm. Near Sycamore, Ill., windstorm; man killed.

12th.—Caughdenoy, N. Y., thunderstorm. Hardaway, Ga., windstorm. Chattanooga, Tenn., Martin Springs, Tex., and Guthrie, Okla., thunderstorms. Lewisburg, Tenn., hailstorm. Duluth, Minn., and Buttzville, N. Dak., thunderstorms. Fergus Falls, Minn., Larrabee, Iowa, Fargo, N. Dak., Chamberlain, and Fulton, S. Dak., and Beaver City, Nebr., hailstorms. Winside, Nebr., windstorm.

13th.—Homestead, Pa., thunderstorm. Near Newport News, Va., thunderstorm; man killed by lightning.

14th.—Gallia Co., Ohio, hailstorm. Miles City, Mont., thunderstorm.

15th.—Basic City, Va., thunderstorm. Near Columbia, S. C., windstorm. Lake Charles, La., rainstorm. Near Crowley, La., thunderstorm; man killed by lightning. Abilene, Tex., hailstorm. Ada, Minn., thunderstorm; boy and stock killed by lightning.

16th.—Little Rock, Ark., and Rapid City, S. Dak., thunderstorms. Near Sutherland, Nebr., tornado; heavy hail and one person killed by lightning. North Platte, Nebr., thunderstorm; stock killed by lightning.

17th.—Mobile, Ala., Little Rock, Ark., Kansas City, Holden, Moberly, Mo., and Neola, Iowa, thunderstorms. Wallace, Nebr., thunderstorm; one person killed by lightning. Lamonte and Warrensburg, Mo., Villisca and Dow City, Iowa, Hartford, Kans., and Stella, Nebr., windstorms.

19th.—Near Hutchinson, Minn., thunderstorm; one person killed by lightning. Nicollet County, Minn., hailstorm.

20th.—Crookston, Minn., and Beaver City, Nebr., hailstorms.

21st.—Yazoo City, Miss., windstorm. Savannah, Tenn., thunderstorm. Galveston, Tex., thunderstorm; one person killed and two injured by lightning. Stevens Point, Wis., thunderstorm. Colorado Springs, Colo., thunderstorm; child killed by lightning. Near Gallinas Spring, N. Mex., hailstorm.

22d.—Newbern, N. C., thunderstorm. Monks Corners, S. C., thunderstorm; one person killed by lightning. Near Ridgeway, S. C., thunderstorm; one person killed by lightning. Near Society Hill, S. C., thunderstorm; two persons killed by lightning. Nelson County, N. Dak., and Greenwood, S. Dak., hailstorms.

23d.—Stratford, N. H., Middlebury, Conn., Charlotteburg, N. J., Unionville, Mo., Des Moines, Iowa, and Fontanelle, Nebr., thunderstorms. Hancock County, Iowa, Hokah, Quincy, St. Charles, and Mazeppa, Minn., hailstorms.

24th.—Cambridge, Mass., Hightstown and Cranbury Sta-

tion, N. J., thunderstorms. Edinboro, Pa., thunderstorm; one person killed by lightning. Near Owensboro, Ky., windstorm. Van Wert, Ohio, thunderstorm; one person killed by lightning. Near Lanark and Bloomington, Ill., and Anderson, Ind., thunderstorms.

25th.—Plymouth, Mass., thunderstorm. Near West Simsbury, Conn., thunderstorm; stock killed by lightning. Dale Enterprise, Va., thunderstorm. Leonia, Miss., Sycamore, Paw Paw, and Hanover, Ill., Eagle, Wis., Palmyra, Steffenville, Arthur, and Kirksville, Mo., windstorms. Near Albany, Tex., thunderstorm; stock killed by lightning. Baird, Tex., thunderstorm; one person killed by lightning. Chattanooga, Tenn., Abilene and Clyde, Tex., Columbia, Mo., Marquette, Mich., Milwaukee, Wis., Keokuk, Grundy Center and Sioux City, Iowa, thunderstorms. Dedham, Iowa, thunderstorm; man killed by lightning.

26th.—Bemus Point, Lyons, Friendship, and Clyde, N. Y., thunderstorms. Le Roy, N. Y., thunderstorm; one person killed by lightning. Palmyra, N. Y., thunderstorm; stock killed by lightning. Edinboro, Pa., thunderstorm; man and stock killed by lightning. Albion and Springboro, Pa., hailstorms. Leechburg, Pa., thunderstorm; one person killed by lightning. Evans City, Pa., thunderstorm; five horses killed by lightning. Corry, Pa., Pushmataha, Ala., near Elon, Ark., Quincy, Ill., and Anderson, Ind., thunderstorms. Mount Sterling, Ky., thunderstorm; horse killed by lightning.

27th.—North Billerica, Mass., thunderstorm; two persons killed by lightning. Millville and Vineland, N. J., and York, Pa., thunderstorms. Spottsville, Va., thunderstorm; horse killed by lightning. Parkersburg, W. Va., rainstorm. Dresden, Kans., hailstorm.

28th.—Tewkesbury, Mass., thunderstorm; two persons killed by lightning.

29th.—Coeymans, N. Y., and Staunton, Va., hailstorms. Lambertville, N. J., thunderstorm. Abilene, Tex., rainstorm.

30th.—Millville, N. J., Louisburg, N. C., and Nashville, Tenn., thunderstorms. Pensacola, Fla., thunderstorm; three persons stunned by lightning. Leonia, Miss., windstorm.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere, as a whole, is very nearly constant from year to year, but the proportion received by the surface of the earth depends largely upon the absorption by the atmosphere, and varies with the distribution of cloudiness. The sunshine is now recorded automatically at 17 regular stations of the Weather Bureau by its photographic, and at 28 by its thermal effects. At three stations records are kept by both methods. The results are given in Table XI for each hour of local, not seventy-fifth meridian, time. The cloudiness is determined by numerous personal observations at all stations during the daytime, and is given in the column of "average cloudiness" in Table I; its complement or clear sky is given in the last column of Table XI.

COMPARISON OF SUNSHINE AND CLEAR SKY.

The sunshine registers give the *duration* of direct sunshine whence the percentage of possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. It should not be assumed that these numbers should agree, and for comparative purposes they have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental record of percentages of duration of sunshine is almost always larger than the observer's personal estimates of percentages of area of clear sky; the average excess for June, 1895, is 9 per cent for photographic records, and 14 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshine.

Photographic stations.	Instrumental.			Thermometric stations.	Instrumental.		
	Instrumental.	Personal.	Difference.		Instrumental.	Personal.	Difference.
Tucson, Ariz.	88	73	15	Cincinnati, Ohio†	85	67	19
Salt Lake City, Utah† ..	80	55	25	Chicago, Ill.	83	70	13
Cleveland, Ohio	73	59	14	Columbus, Ohio	81	54	27
Portland, Oreg. †	73	56	17	Salt Lake City, Utah† ..	81	55	26
Galveston, Tex.	72	67	5	Washington, D. C.	80	63	16
Santa Fe, N. Mex.	71	58	13	Atlanta, Ga.	78	56	22
Savannah, Ga.	70	62	8	Detroit, Mich.	77	65	12
Denver, Colo.	68	50	18	Norfolk, Va.	76	74	2
Dodge City, Kans.	65	57	8	Rochester, N. Y.	76	64	12
Memphis, Tenn.	63	62	1	Louisville, Ky.	75	58	17
Helena, Mont.	59	54	5	Key West, Fla.	73	54	19
San Diego, Cal.	59	64	— 5	St. Louis, Mo.	73	49	23
Bismarck, N. Dak.	57	44	13	San Francisco, Cal.	70	69	1
Eastport, Me.	48	34	14	Portland, Oreg. †	69	56	13
Cincinnati, Ohio† .....	.....	67	.....	Philadelphia, Pa.	68	45	23
Kansas City, Mo.* .....	.....	.....	.....	Little Rock, Ark.	65	45	20
Spokane, Wash. ....	.....	42	.....	New Haven, Conn.	64	58	6
				Seattle, Wash.	64	50	14
				Marquette, Mich.	63	38	25
				Portland, Me.	62	33	29
				Baltimore, Md.	60	56	4
				Buffalo, N. Y.	60	49	11
				Des Moines, Iowa.	60	38	22
				Vicksburg, Miss.	59	56	3
				Wilmington, N. C.	59	61	— 2
				Boston, Mass.	56	47	9
				New York, N. Y.	56	47	9
				New Orleans, La.	50	50	0

* Record incomplete. † Records kept by both methods.

ATMOSPHERIC ELECTRICITY.

The statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month.

The dates on which reports of thunderstorms for the whole country were most numerous were: 12th, 221; 13th, 215; 24th, 283; 25th, 232; 26th, 235; 27th, 200.

Thunderstorm reports were most numerous in: Ohio, 190; Pennsylvania, 196; Colorado, 166; Iowa, 161; Louisiana, 153; Minnesota, 181; and Missouri, 260. The dates of occurrence of thunderstorms were most numerous in: Alabama, 26 days; Colorado, 26 days; Louisiana, 30; Minnesota, 28; Missouri, 26.

Severe thunderstorms are especially mentioned under "Local Storms."

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 2d to the 10th, inclusive. On the remaining twenty-one days of this month 55 reports were received, or an average of about two or three per day. The dates on which the reported number especially exceeded this average were the 6th and 9th.

Auroras were reported by a large percentage of observers in: Colorado, 16 per cent; New Hampshire, 50; North Dakota, 16.

The largest number of days on which auroras were reported in any State were: Minnesota and Washington, 7 days; New Hampshire, 9; North Dakota, 6.

DAMAGE BY LIGHTNING, JUNE, 1895.

The following statistics of the damage done by lightning, so far as reported by the observers of this Bureau, are furnished by Mr. Alexander McAdie: During June, 1895, 97 persons were killed and 89 severely injured; 14 empty and 50 full barns, 89 dwellings, and 15 churches were destroyed; 50 horses in stables and 45 in pasture were killed. The total estimated value of property destroyed was \$85,200.

CANADIAN DATA—THUNDERSTORMS AND AURORAS.

Thunderstorms were reported as follows: Saint Andrews, 14. Father Point, 1, 11, 12, 21, 23, 29. Quebec, 13, 14, 21, 23,